

Remarks

Attached hereto are AMENDED CLAIMS.

Rejections Under 35 USC § 103 (a)

The Examiner rejected the instant claims on the basis of being obvious over Gerritsen et al. (EP-0870817 A1) in view of Takahashi et al. (US 4,845,068), Takahashi (EP-0357295 A2), or Takahashi (EP-289211 A1).

It is puzzling why the Examiner states that Gerritsen can be operated with a feedstock having a sulfur content less than 1000 ppm in view of the express requirement made clear throughout the specification and claims of Gerritsen that the sulfur content be 0.1 wt. % (1,000 ppm), or more. Gerritsen, if anything, teaches away from the express requirement of the instant claims that the feedstock has a sulfur content between about 150 to about 500 ppm. The Examiner's interpretation of Gerritsen is not only unsubstantiated, it is contrary to the express teachings of Gerritsen and Gerritsen clearly may not rightfully be used as a basis for rejection of the instant claims under 35 USC § 103 (a).

Applicants respectfully, but adamantly maintain that the Takahashi references relate to chemical processes so distinct from those of the present invention as to render the Takahashi references irrelevant to the patentability of the instant claims.

First of all, with regard to the Takahashi references, the Examiner indicates that those references do not disclose the amount of sulfur in the product stream. This is incorrect, in that it is inherently derivable from the amount of sulfur in the feed and the conversion percentages.

In US 4,845,068 the sulfur content of the feed is 1.61 wt.%. The conversion varies between 94.1% (Example F1) and 76.7% (Example D4), which corresponds to product sulfur contents of 0.095 wt.% (950 ppm) and 0.38 wt.% (3751 ppm).

In EP 357295 the sulfur content of the feed is 1.13 wt.% (page 9, first table). The conversion varies between 89.5 (Example 84) and 77.8 (Example 13), which corresponds to product sulfur contents of 0.12 wt.% (1187 ppm), and 0.25 wt.% (2508 ppm).

EP 289211 has the same disclosure as US 4,845,068.

Thus, even the product sulfur contents in the Takahashi references are higher than the feed sulfur contents of the present invention, and that in itself renders the Takahashi references irrelevant to the patentability of the instant claims.

Accordingly, there is no way in which the combination of Gerritsen with one or more of the Takahashi references could lead to the process of the instant claims.

In fact, the combination of references sought by the Examiner does not even provide a *prima facie* case for obviousness of the present invention. To state such a case the prior art must provide suggestion or motivation to those of ordinary skill in the art to make the necessary combination, for there to be a reasonable expectation of success of the combination and for the references, when combined, to teach or suggest all the claim limitations (MPEP 2143). The limitations of the instant claims concerning feedstock sulfur content are such an order of magnitude different than those of the cited references, that the references, neither alone nor in combination, could rightly be said to teach or suggest all the limitations of the instant claims.

Perhaps even more important than differences in requirements of sulfur content in respective feedstocks between the Takahashi references and the instant claims, what the Examiner ignores are the fundamental differences between the respective hydrodesulfurization processes of the Takahashi references and those of the present invention that renders the Takahashi references irrelevant to the patentability of the instant claims. The Examiner disregards the difference between the compounds converted in conventional HDS, such as thiophenes, versus ultra-deep HDS, such as alkylated dibenzothiophenes, allegedly because Takahashi would not be limited to thiophenes. It is respectfully submitted, however, that, even though not indicated in words, in fact Takahashi is limited to thiophene conversion, or at least to the easily convertible sulfur compounds.

As is explained in the previously submitted Plantenga declaration, when one starts with feed sulfur contents within the ranges cited in the Takahashi references and ends with product sulfur content obtained therein, the process carried out is conversion of sulfides, disulfides, thiophenes and benzothiophenes, even if it is not indicated as such.

The Examiner's objection that the conversion of alkylated dibenzothiophenes is not in the claims has been obviated by the inclusion of the requirement of that chemistry in the instant claims.

In view of the above, it is clear that one of ordinary skill in the art would not know to combine Gerritsen and the Takahashi references because those references are not directed to solving the same problem. Gerritsen may be directed to solving the problem of ultra-deep hydrodesulfurization, but the Takahashi references deal with the problem of conventional hydrodesulfurization. Solutions to those problems involve totally different chemistries.

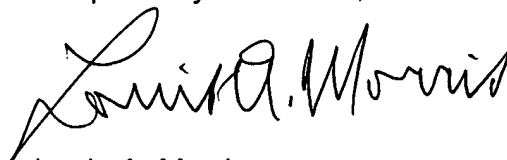
The law is clear that a court or examiner may find a motivation to combine prior art references in the nature of the problem to be solved, with the motivation existing when the same problem is solved by the various references (*Rutz v. A.V. Chance Co.*, 69 USPQ 2d 1686 (CAFC)). Logically, if the nature of the problems dealt with by the various references are different, there will be no motivation to make the combination.

Conclusion

To combine the Takahashi references and Gerritsen to arrive at the present invention, one of ordinary skill in the art would also somehow have to know to use the organic additive of the Takahashi references in the process of Gerritsen in spite of the feedstock sulfur content and chemistry of and the problems solved by the two processes being completely different. Combining the references in that manner would in fact be an exercise in hindsight, clearly not permitted under the law. The claimed subject matter is thus non-obvious over Gerritsen in view of Takahashi.

It is respectfully requested that the instant claims be allowed and that the present application proceed to issue in due course.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Louis A. Morris". The signature is fluid and cursive, with the first name "Louis" being more prominent.

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